

PATENT SPECIFICATION

(11)

1 372 692

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(54) IMPROVEMENTS RELATING TO CIGARETTES

- (71) We, MOLINS LIMITED, a British Company, of 2 Evelyn Street, Deptford, London, SE8 5DH., do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—
- This invention is concerned with a new construction of a filter cigarette which enables less tobacco to be used than in conventional cigarettes but without reducing the number of draws which can be taken by the smoker for a cigarette of given length.
- In general terms a preferred filter cigarette according to this invention comprises a tobacco portion and a filter portion, the tobacco portion being considerably shorter than the tobacco portion of a conventional cigarette and being enclosed in paper which is both slower-burning and more porous than conventional cigarette paper, while the filter has a substantially greater filtering efficiency than conventional cigarette filters, and the cigarette as a whole (before any of the tobacco portion has been burned away) has the same pressure drop as a conventional cigarette. The filter itself according to the present invention produces a greater pressure drop (e.g. about 50% more) than the filter in a conventional cigarette, while the pressure drop through the tobacco portion is correspondingly less. The filter may be of Estron, which is a trade mark for a cellulose fibre tow.
- A cigarette according to this invention may be made with approximately the same overall length as a conventional cigarette, though with different proportions of the length being taken up by the tobacco and the filter. For example, as compared with a conventional cigarette consisting of a 70 mm tobacco portion and a 12 mm filter, a cigarette according to this invention may for example have a tobacco portion of about 35 mm, with a filter of approximately the same length as the tobacco portion. Between the tobacco portion and the filter there may be an air gap, for example of about 5 mm length, so that the tobacco portion can be smoked all the way to the end without any risk of burning the filter. Alternatively there may for example be a porous wad of glass fibre or some other heat-resistant material between the tobacco portion and the filter.
- The porosity of the cigarette paper according to this invention is preferably greater than that for a conventional cigarette. As a result of this increased porosity, air drawn in through the paper reduces the length of the tobacco portion which is smoked during each draw by the smoker. This tends to increase the number of draws that can be achieved by the smoker for a given length of tobacco. More importantly in view of the slower burning rate of the paper in a cigarette according to this invention, the length of the tobacco portion burnt away while the smoker is not drawing on the cigarette is less than in the case of a conventional cigarette; the burning rate may in fact be only just sufficient to keep the cigarette alight while it is not being smoked. The slower burning rate can be made such that a cigarette according to this invention allows approximately the same number of draws as a conventional cigarette of the same overall length (i.e. including the filter portion).
- Accordingly, by "slow burning rate" we mean a burning rate such that the smoker can get at least approximately as many draws from a given length of the tobacco portion of a cigarette as he can get from twice that length of the tobacco portion of a conventional cigarette.
- It has been found that a slower burning rate while the smoker is drawing on the
- [Price 25p]

cigarette increases the amount of tar content in the smoke. However, the increased filtering efficiency of the filter in a cigarette according to this invention can be such as to reduce the tar content to approximately the same level as in a conventional cigarette, or even lower. The same increase in the filtering efficiency of the filter also reduces the nicotine content in the smoke; the slower burning rate does not have the same increasing effect on the nicotine content as on the tar, so that the net result may be a lowering of the nicotine content of the smoke after it has passed through the filter. If desired, as the nicotine content is thought to produce part of the sensation enjoyed by some smokers, the nicotine content may be restored, for example as described in U.S. patent specification No. 3,340,879, or by using a tobacco with an especially high nicotine content.

The filter portion may consist of a firm section (for example of relatively dense Estron) at the end of the cigarette and a less firm section (for example of less dense Estron or of Myria paper filter material) between the firm section and the tobacco portion. The firm section gives the firmness necessary in the smoker's mouth, while the other section produces a substantial part of the total filtering effect but without producing as much pressure drop as would be produced by a similar section of greater density. The greater part of the filter portion may be taken up by this less dense Estron or Myria section since the filter is required to produce a greater filtering effect than in conventional cigarettes and can occupy a greater length.

As an alternative the filter portion may comprise a radial or transverse flow filter, for example as described in British patent specification no. 1 299 855.

The cigarette (or just the tobacco portion) may be completed by an overwrap of paper formed from reconstituted tobacco, for example as described in British patent application No. 44522/70 (Serial No. 1370878).

Examples of cigarettes according to this invention will now be described with reference to the accompanying drawings which are longitudinal sections of different filter cigarettes.

Figure 1 shows a cigarette which has a tobacco portion 2 joined to a filter portion 4 consisting of sections 6 and 8. Between the filter portion and the tobacco portion there is a porous wad 10 of glass fibre material. As an idea of scale, the length of the tobacco portion may be 37 mm.

It will be seen that the tobacco portion includes a paper wrapping 12 and that the filter sections and wad 10 are all contained in a tube 14. The two parts thus formed

are joined together by a uniting band in the form of a metal strip 16, for example of aluminium. When the cigarette is nearly completely smoked, the heat from the fire ball which is then adjacent to the wad 10 may be such as to cause the metal wrapping 16 to collapse and thus grip the fire ball and prevent it from falling out.

The tube 14 comprises a stiff inner layer (for example cardboard of 8 thousandths of an inch thickness) surrounded by a wrapping of thin paper. The end of the tube contained within the joining strip 16 is preferably impregnated with a fire-resistant material to prevent it from burning.

The assembly consisting of the filter sections, wad 10 and tube 14 may be made in any of the ways described in British patents Nos. 971,491 to 3.

Figure 2 shows a different example in which a tobacco portion 18 with a porous paper wrapping 20 is joined to a filter portion 20 which is of uniform composition along its length. The filter portion in this case is contained within a tube 21 (which may be of the same construction as in the previous example) so as to leave a gap 24 to prevent the fire ball from burning the filter when the tobacco portion is smoked all the way to the end. A strip 22 of metal or other material joins the tube to the tobacco portion 18.

In both of the above examples the filter portions may be formed from Estron of for example 2.4 denier per filament. In the Figure 1 example, the section 6 may be relatively firm, being packed at a density of say 170 mg per c.c., and the section 8 may be packed at a density of 140 mg per c.c. In Figure 2 the density of the Estron filter portion 20 may be for example 160 mg per c.c. By way of example, the density of an Estron filter in a conventional cigarette may be say 170 mg per c.c.; the length of such a conventional filter would be for example 12 to 17 mm.

It will be appreciated that each filter section may include a wrapping, though this has been omitted for the sake of clarity.

The slow-burning cigarette paper 12 or 20 is preferably of a dark colour so as not to show the dark ring which we find tends to occur at the burning end of the cigarette owing to the slow burning rate. A slow burning rate can be achieved by having a relatively low chalk content in the paper. Conventional cigarette papers typically have a chalk content in excess of 20 per cent. By "low chalk content" we mean a chalk content much lower than that of conventional cigarette papers.

An example of a suitable black cigarette paper is that made by Papeteries de Malaucene of 3 Place Aristide Briande, 84 Carpentas, France. This paper can be made

with the necessary slow burning rate. It is however preferably provided with the necessary porosity by sparking, that is to say by passing the paper between electrodes across which regular electric discharges occur so as to form small holes in the paper; this facilitates the provision of a high degree of uniformity of porosity.

The following is a further example of a cigarette according to this invention:—

- Overall length 85 mm
- Outside diameter 8.1 mm
- Tobacco portion length 32 mm
- Overall pressure drop 131 mm water gauge
- Filter portion length (Estron) 43 mm
- Filter density 161 mg/cc
- Pressure drop through filter portion 105 mm water gauge
- Length of gap 10 mm

As an alternative, a similar smoking performance may be obtained by replacing the 43 mm Estron filter with a 22 mm Estron section of 176 mg/cc density (giving a pressure drop of 60 mm water gauge) plus a 12 mm Myria section giving a pressure drop of 45 mm water gauge, the gap between the Myria section and the tobacco portion in this case being 18 mm.

Cigarettes according to this invention may be made by forming double-length filter portions, joining tobacco portions to both ends of the double-length filter portions and cutting the resulting assembly through the middle to form two separate filter cigarettes.

The specification also embodies an invention which is the subject of patent application No. 38918/70 (Serial No. 1372691) out of which this application is divided.

WE CLAIM:—

1. A filter cigarette comprising a tobacco portion having a wrapper with a low chalk

content to produce a slow burning rate, and a filter portion having a pressure drop considerably greater than the pressure drop through the tobacco portion.

2. A filter cigarette according to claim 1 in which the pressure drop through the filter portion is at least twice the pressure drop through the tobacco portion.

3. A filter cigarette according to claim 1 or claim 2 in which the tobacco portion is not substantially more than half the length of the whole cigarette.

4. A filter cigarette according to any preceding claim in which the burning rate of the tobacco portion wrapper is only just sufficient to keep the cigarette alight.

5. A filter cigarette according to any preceding claim in which the wrapper of the tobacco portion has discrete preformed perforations in it.

6. A filter cigarette according to claim 5 in which the perforations are the result of sparking.

7. A filter cigarette according to any preceding claim in which the filter portion is contained in a tube which is joined to the tobacco portion by a uniting band.

8. A filter cigarette according to claim 7 in which the tube contains two or more filter sections arranged end to end.

9. A filter cigarette according to claim 7 or claim 8 in which the filter portion includes, starting at the end remote from the tobacco portion, a firm section of cellulose acetate and a section comprising lower-density cellulose acetate or a different material.

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1372692 COMPLETE SPECIFICATION

1 SHEET This drawing is a reproduction of
the Original on a reduced scale

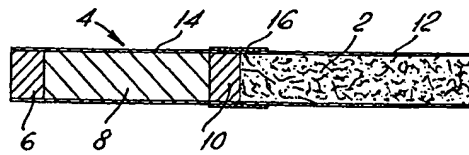


Fig.1.

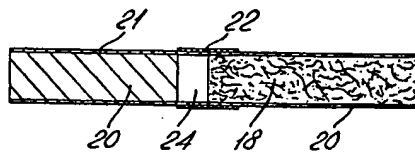


Fig.2.